

That which is claimed is:

- 5 1. A solar water heater comprising:
a water-tight resealable container,
at least one energy converting structure, wherein said structure is incorporated
within said water heater, and
insulation structure sufficient to enable said heater to achieve water
temperatures of at least 60° C.
- 10 2. A water heater according to claim 1, wherein said container is rigid.
3. A water heater according to claim 1, wherein said container comprises a glass or
polymeric material.
- 15 4. A water heater according to claim 1, wherein said container is flexible.
5. A water heater according to claim 1, wherein said energy converting structure is
contained within said container.
- 20 6. A water heater according to claim 5, wherein said energy converting structure is
colored to enhance energy absorption thereof.
7. A water heater according to claim 5, wherein said energy converting structure is
black.
- 25 8. A water heater according to claim 5, wherein said energy converting structure is
coated on the internal surface of said container.
9. A water heater according to claim 5, wherein said energy converting structure is
30 flexible and expansive.

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10 A water heater according to claim 5, wherein said energy converting structure is pleated, or layered to maximize the surface area thereof.

5 11. A water heater according to claim 5, wherein the position of said energy converting structure is adjustable within said container; and where an attachment is part of said energy converting structure to allow adjustment of the converting structure from outside said container.

10 12. A water heater according to claim 5, wherein said energy converting structure is a two-sided panel.

13. A water heater according to claim 12, wherein said panel is bonded to one or more interior surfaces of said container.

15 14. A water heater according to claim 13, wherein said panel comprises flow structure that provides for flow of water from a first side of said panel to a second side of said panel.

20 15. A water heater according to claim 14, wherein said panel comprises a perforated polymeric material.

25 16. A water heater according to claim 1, wherein said insulation comprises one or more insulating structures selected from gas contained within air-tight structures, and/or closed or open cell foam.

17. A water heater according to claim 16, wherein said insulating structure comprises at least one inflatable airspace inside of said container.

30 18. A water heater according to claim 16, wherein said insulating structure comprises at least one inflatable airspace outside of said container.

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19. A water heater according to claim 16, wherein said insulating structure comprises at least one inflatable airspace inside, and at least one inflatable airspace outside of said container.

5 20. A water heater according to claim 16, wherein said insulating structure is coextensive with said container.

21. A water heater according to claim 16, wherein said insulating structure on both the front and back of said container is inflatable.

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22. A water heater according to claim 16, wherein said insulating structure comprises an energy reflective surface.

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23. A water heater according to claim 1, wherein said resealable container comprises at least one water-tight threaded spout with a mating threaded cap.

24. A water heater according to claim 23, wherein said water-tight cap further comprises a pump-action pressurized sprayer, and/or a water-well pump configuration.

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25. A water heater according to claim 1, wherein said resealable container comprises at least one outlet that may have a spout, stopcock, sprayer, shower, sport-cap or filter-containing attachment.

25 26. A water heater according to claim 1, wherein said container comprises one or more hanging attachments to enable gravitational effects to dispel water.

27. A water heater according to claim 1, further comprising a temperature indicator for indicating the temperature history of the water contained therein.

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28. A water heater according to claim 27, wherein said temperature indicator is a thermometer, a liquid crystal sheet indicator, or a water pasteurization indicator (WAPI).

5 29. A water heater according to claim 28 wherein said temperature indicator comprises 2 or more WAPI's.

30. A water heater according to claim 1, further comprising one or more particulate, anti-microbial, or charcoal filters.

10 31. A water heater according to claim 30, wherein said filter is associated with said resealable opening, such that water introduced into and/or dispensed from said container passes through said filter.

15 32. A solar water heater comprising:
a water-tight resealable container,
one or more energy converting structures therein, and
at least one insulating structure associated with said container to reduce energy
loss from external surfaces thereof and provide insulation sufficient to enable said
20 water heater to achieve water temperatures of at least 60° C.

33. A water heater according to claim 32, wherein said container comprises one or more pleated structures to provide for expansion of the container upon filling said container with liquid.

25 34. A water heater according to claim 32, further comprising a reflective cooker, and/or solar cooker.

30 35. A water heater according to claim 34, wherein said reflective cooker and/or said solar cooker is placed external to said container.

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36. A solar water heater comprising:

a water-tight container, wherein said container comprises a top and a bottom and at least one resealable opening,

one or more energy converting structures therein, and

at least one insulating structure to reduce energy loss from external surfaces thereof and provide insulation sufficient to enable said water heater to achieve water temperatures of at least 60° C.

37. A method for the production of potable water, said method comprising exposing water contained within a water heater according to claim 1 to a suitable energy source for a time sufficient to pasteurize said water.

38. The method according to claim 37, wherein said suitable energy source is sunlight.

39. A method for the pasteurization of water, said method comprising exposing water contained within a water heater according to claim 31 to a suitable energy source for a time sufficient to pasteurize said water.

40. A method for the pasteurization of water, said method comprising introducing at least one energy converting structure and water into a transparent container and exposing said container to a suitable energy source for a time sufficient to pasteurize said water.

41. A method for the pasteurization of water, said method comprising introducing at least one energy converting structure and water into a container, surrounding said container with insulating material, and exposing said water heater to a suitable energy source for a time sufficient to pasteurize said water.

42. The method according to claim 41, further comprising surrounding said container with a solar cooker, or another energy focusing device.

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43. A method of assembly of a solar water heater, said method comprising stacking first, second and third sheets of a flexible polymeric material, bonding said sheets together at or near the perimeters of said sheets to create a three-ply structure, wherein
5 said first and second sheets upon bonding, form a water-tight container containing therein said third sheet, wherein at least said first sheet is transparent and wherein said third sheet is an energy converting structure.

44. A method of assembly according to claim 43, wherein said third sheet is
10 perforated.

45. A method of assembly according to claim 43, wherein said first and/or second sheets comprise a first resealable opening for the introduction of water therethrough.

46. A method of assembly according to claim 43, further comprising stacking and bonding a fourth sheet of flexible polymeric material to said first or second sheet of material along the perimeter thereof, said fourth sheet providing a transparent
15 insulating airspace.

47. A method of assembly according to claim 46, wherein said fourth sheet comprises a second resealable opening for the inflation of said insulating airspace.

48. A solar water heater kit to be used with existing containers comprising at least one energy converting structure, and at least one thermal insulating structure.
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49. The kit according to claim 48, further comprising one or more particulate, anti-microbial, or charcoal filters.

50. The kit according to claim 48, further comprising a temperature indicator for
30 indicating the temperature history of the water contained within said water heater.

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51. The kit according to claim 48, further comprising a universally fitting cap, spout, stopcock, sprayer, shower, or sport-cap attachment compatible with said existing container outlet.

52. The kit according to claim 48, further comprising a reflective cooker, and/or solar cooker.

53. A solar water heater kit to be used with existing containers comprising at least one internal energy converting structure, and a reflective cooker, and/or solar cooker.

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